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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MITCHELL B. HAERI

Appeal 2019-003875
Application 15/150,781
Technology Center 2600

BEFORE CAROLYN D. THOMAS, GREGG I. ANDERSON, and IRVIN E. BRANCH, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–4, 6–10, 12–17, and 19–23. Claims 5, 11, and 18 were previously cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Raytheon Company. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to "counter-counter measure" technologies intended to "dazzle imaging cameras" with lasers, thus interfering with the ability of the cameras to image enemy targets. Spec.[2] ¶¶ 2, 4. "[A]nti-dazzle devices have been developed to attenuate the lasers." *Id.* ¶ 2.

The Specification describes an "anti-dazzle imaging camera" which "includes a photorefractive crystal that is wavelength-agnostic." *Id.* ¶ 4. The photorefractive crystal receives an optical beam and attenuates a laser beam and passes an optical beam, without change, to an imaging detector. *Id.* The wavelength-agnostic photorefractive crystal provides protection again "dazzle from tunable laser radiation." *Id.* ¶ 33. "A size of the photorefractive crystal is substantially the same as a cross-section size of the converging optical beam at a point where the converging optical beam enters the photorefractive crystal." *Id.* ¶ 25.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. An anti-dazzle imaging camera, comprising:
>
> an aperture configured to receive an optical beam through an adjustable-sized opening;
>
> a lens assembly configured to receive the optical beam from the aperture and focus and converge the optical beam; and

[2] We use "Spec." to refer to the Specification filed May 10, 2016, "Final Act." to refer to the Final Action mailed June 8, 2018, "Appeal Br." to refer to the Appeal Brief filed November 13, 2018, "Ans." to refer to the Examiner's Answer mailed February 27, 2019, and "Reply Br." to refer to the Reply Brief filed April 22, 2019.

a photorefractive crystal having a first surface and a second surface, the photorefractive crystal configured (i) to receive the converging optical beam from the lens assembly, (ii) when the optical beam includes no laser radiation, to pass the optical beam unchanged to an imaging detector, and (iii) when the optical beam includes laser radiation in a visible to near-infrared (NIR) spectral band, to attenuate the laser radiation to generate a modified optical beam and to pass the modified optical beam to the imaging detector,

wherein, to attenuate the laser radiation, the photorefractive crystal is configured to (i) reflect, using Fresnel's reflection, a portion of the laser radiation off the first surface of the photorefractive crystal back into the photorefractive crystal and (ii) write a grating in the photorefractive crystal due to interference between the portion of the laser radiation reflected off the first surface and a second portion of the laser radiation entering the second surface of the photorefractive crystal,

wherein the photorefractive crystal is wavelength-agnostic, and

wherein a size of the photorefractive crystal is substantially the same as a cross-section size of the converging optical beam at a point where the converging optical beam enters the photorefractive crystal.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Sharp	US 5,073,705	Dec. 17, 1991
Cook	US 8,145,019 B1	Mar. 27, 2012
Pannell	US 2013/0155485 A1	June 20, 2013
Evans	US 2007/0243125 A1	Oct. 18, 2007
Miller	US 5,449,904	Sept. 12, 1995

REJECTIONS

Claims 1–4, 7–10, 13–17, and 19–23 are rejected under 35 U.S.C. 103 as being unpatentable over Sharp, Cook, Pannell, and Evans. Final Act. 3–11.

Claims 6 and 12 are rejected under 35 U.S.C. 103 as being unpatentable over Sharp, Cook, Pannell, Evans, and Miller. *Id.* at 11–12.

OPINION

Issue: Does Sharp teach "a size of the photorefractive crystal is substantially the same as a cross-section size of the converging optical beam at a point where the converging optical beam enters the photorefractive crystal" ("substantially the same limitation"), as recited in representative claim 1?

The Examiner relies on Sharp for substantially the same limitation. Final Act. 4–5 (citing Sharp, Fig. 1, 4:15–27 (describing Fig. 1). Sharp's Figure 1 is reproduced below.

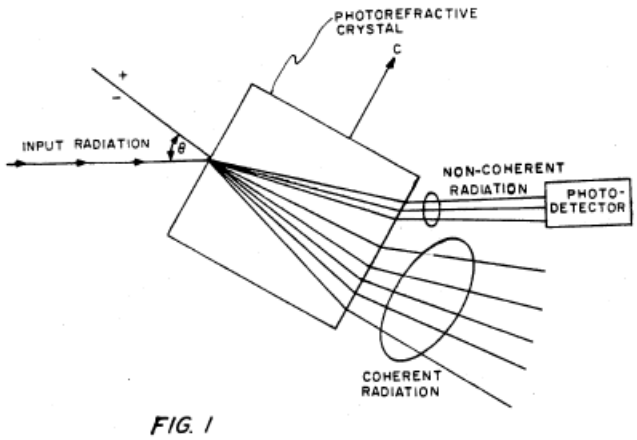

FIG. 1

Figure 1 is a schematic showing a photorefractive crystal system. Sharp, 2:33–34, 48–49.

The Examiner determines that Figure 1 of Sharp shows that "the photorefractive crystal is slightly larger than a cross-section of the input

radiation at a point where the input radiation enters the photorefractive crystal." Final Act. 5. The Examiner further determines that the term "substantially the same" is interpreted broadly and "does not preclude photorefractive crystals that are slightly larger than a cross-section size of the optical beam." *Id.* Thus, even though Sharp's "slightly larger" relationship between the input radiation and the refractive crystal does not expressly disclose the substantially the same limitation, the limitation falls within the scope of the broadest reasonable interpretation of "substantially." *Id.*

Appellant argues that "Figure 1 of *Sharp* shows that the photorefractive crystal is substantially larger than the cross-section size of the input radiation at a point where the input radiation enters the photorefractive crystal." Appeal Br. 12. Appellant argues "[n]othing in *Sharp* teaches or suggests that the photorefractive crystal is slightly larger than a cross-section size of the input radiation at a point where the input radiation enters the photorefractive crystal." *Id.* at 13–14.

In the Answer, the Examiner contends that the Specification does not use "substantially" in connection with the size of the refractive crystal. Ans. 15–16. The Examiner does acknowledge the Specification describes that "photorefractive crystal 102 may be matched to the footprint of the optical beam 106 at the point of insertion, as illustrated in FIGURE 2." *Id.* at 16 (citing Sharp ¶ 25). Relying in part on dictionary definition, the Examiner contends that "substantially means 'being largely but not wholly that which is specified.'" *Id.* (citing Merriam-Webster.com. Merriam-Webster, n.d. Web. 24 July 2018). The Examiner determines the dictionary definition is the ordinary and customary meaning of "substantially." *Id.* The Examiner

determines that "slightly larger" is equivalent to the construction of "substantially" and therefore Sharp discloses the substantially the same limitation. *Id.*

In its Reply, Appellant contends the Examiner's construction of "substantially" "is not consistent with the Appellant's specification and drawings." Reply Br.2. Regardless of the construction, Appellant argues Figure 1 of Sharp "does not disclose or suggest a photorefractive crystal that is slightly larger than a cross-section size of an optical beam." *Id.* at 3.

Our reviewing court has determined the term "substantially uniform thickness," meant "of largely or approximately uniform thickness." *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1361 (Fed.Cir.2003). Although this interpretation is similar to the Examiner's construction, we are not persuaded that Sharp discloses the substantially the same limitation.

We specifically determine that the predicate for the Examiner's determination is that Sharp discloses that the photorefractive crystal is "slightly larger" than the "where the optical beam enters the photorefractive crystal." We agree with the Appellant that Sharp discloses that the photorefractive crystal is in fact substantially larger than the point where the input radiation enters the photorefractive crystal. *See* Appeal Br. 12. Indeed, based on Sharp's Figure 1, the optical beam has virtually no cross section.

For the above reasons, we do not sustain the Examiner's rejection of claim 1. Independent claims 8 and 14 claim the same cross-section relationship between the optical beam and the photorefractive crystal and stand rejected for the same reasons as discussed in connection with claim 1. Final Act. 4–9. The rejections of claims 8 and 14 are likewise not sustained.

The remaining claims, 2–4, 6–7, 9–10, 12–13, 15–17, and 19–23, all depend from claims 1, 8, or 14 and the rejections of those claims are not sustained.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–4, 7–10, 13–17, 19–23	103	Sharp, Pannell, Cook, Evans		1–4, 7–10, 13–17, 19–23
6, 12	103	Sharp, Pannell, Cook, Evans, Miller		6, 12
Overall Outcome				1–4, 6–10, 12–17, 19–23

REVERSED